

USSN: 10/810,065

Attorney Docket No.: 55752US019

**Amendments to the Claims**

Please amend claims 1, 26, 50 and 51 and add new claims 62-65 as shown below:

1. (currently amended): A process for dry converting a moving ~~web substrate passing from an unwind reel to a takeup reel comprising~~ substrate comprising:  
unwinding a web substrate; and  
conveying the substrate through a dry converting station in a close enclosure while supplying the enclosure with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure.
2. (original): A process according to claim 1 comprising conveying the substrate through a series of interconnected close enclosures.
3. (original): A process according to claim 1 comprising conveying the substrate in a close enclosure or series of close enclosures through at least a first dry converting station in the process.
4. (original): A process according to claim 1 comprising conveying the substrate in a close enclosure or series of close enclosures through at least a last dry converting station in the process.
5. (original): A process according to claim 1 comprising conveying the substrate in a close enclosure or series of close enclosures from at least a first dry converting station in the process through at least a last dry converting station in the process.
6. (original): A process according to claim 1 comprising conveying the substrate in a close enclosure or series of close enclosures from at least a first dry converting station in the process up to a takeup reel or up to or through a packaging station.

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7. (previously presented): A process for dry converting a moving substrate of indefinite length comprising conveying the substrate through a dry converting station in a close enclosure while supplying the enclosure with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure, the process further comprising conveying the substrate in a close enclosure or series of close enclosures from a cabinet containing an unwind reel to a cabinet containing a takeup reel.

8. (original): A process according to claim 1 wherein at least two close enclosures have different pressures, temperatures, average headspaces or average footspaces.

9. (original): A process according to claim 1 comprising maintaining or establishing a positive pressure in at least one close enclosure and maintaining or establishing a negative pressure in at least one other close enclosure.

10. (previously presented): A process for dry converting a moving substrate of indefinite length comprising conveying the substrate through a dry converting station in a close enclosure while supplying the enclosure with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure, the process further comprising supplying a conditioned gas stream to at least the first in a series of interconnected close enclosures whereby the conditioned gas is carried along with the moving substrate to a downstream close enclosure or pushed to an upstream enclosure or process.

11. (previously presented): A process for dry converting a moving substrate of indefinite length comprising conveying the substrate through a dry converting station in a close enclosure while supplying the enclosure with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure, the process further comprising supplying conditioned gas streams to a plurality of close enclosures and withdrawing gas from a plurality of close enclosures.

12. (original): A process according to claim 1 comprising supplying conditioned gas streams to each in a series of interconnected close enclosures.

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13. (original): A process according to claim 1 comprising sealing the moving substrate at the upstream and downstream ends of a series of interconnected close enclosures.

14. (original): A process according to claim 1 comprising maintaining a pressure gradient of at least about -0.5 Pa or higher in a close enclosure.

15. (original): A process according to claim 1 comprising maintaining a positive pressure gradient in a close enclosure.

16. (original): A process according to claim 1 comprising connecting first and second enclosures having a material difference in their respective operating pressures via a close enclosure comprising a transition zone.

17. (original): A process according to claim 16 wherein there is a ten-fold or greater pressure difference between atmospheres in the first and second enclosures.

18. (original): A process according to claim 1 wherein the total of the average headspace and average footspace in a close enclosure is 10 cm or less.

19. (previously presented): A process for dry converting a moving substrate of indefinite length comprising conveying the substrate through a dry converting station in a close enclosure while supplying the enclosure with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure, wherein the total of the average headspace and average footspace in a close enclosure is 5 cm or less.

20. (previously presented): A process according to claim 19 wherein the total of the average headspace and average footspace in any close enclosure is 3 cm or less.

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21. (previously presented): A process for dry converting a moving substrate of indefinite length comprising conveying the substrate through a dry converting station in a close enclosure while supplying the enclosure with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure, wherein a first chamber having a gas introduction device is positioned near a control surface, a second chamber having a gas withdrawal device is positioned near the control surface, the control surface and first and second chambers together define a region wherein adjacent gas phases possess an amount of mass, at least a portion of the mass from the adjacent gas phases is transported through the gas withdrawal device by inducing a flow through the region, and the mass flow can be segmented into the following components:

**M1** means total net time-average mass flow per unit of substrate width into or out of the region resulting from pressure gradients,

**M1'** means the total net time-average mass flow of a gas per unit width into the region through the first chamber from the gas introduction device,

**M2** means the time-average mass flow of conditioned gas per unit width from or into the at least one major surface of the substrate into or from the region,

**M3** means total net time-average mass flow per unit width into the region resulting from motion of the material, and

**M4** means time-average rate of mass transport through the gas withdrawal device per unit width.

22. (original): A process according to claim 21 wherein M1 has a value less than zero and greater than -0.25 kg/second/meter.

23. (original): A process according to claim 21 wherein M1 has a value less than zero and greater than -0.10 kg/second/meter.

24. (original): A process according to claim 1 comprising flowing a stream of conditioned gas at a rate sufficient to reduce a close enclosure particle count by 75% or more.

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25. (original): A process according to claim 1 comprising flowing streams of conditioned gas at a rate sufficient to reduce the close enclosure particle counts by 90% or more.

26. (currently amended): An apparatus for converting a moving web substrate ~~passing from an unwind reel to a takeup reel~~, the apparatus comprising ~~a dry~~ an unwind reel, dry converting station and ~~substrate-handling~~ web-handling equipment for conveying the substrate ~~from the unwind reel~~ through the dry converting station, the substrate being enveloped in the dry converting station by a close enclosure supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure.

27. (original): An apparatus according to claim 26 wherein the substrate is conveyed through a series of interconnected close enclosures.

28. (original): An apparatus according to claim 26 wherein the substrate is enveloped by a close enclosure or series of close enclosures through at least a first dry converting station in the apparatus.

29. (original): An apparatus according to claim 26 wherein the substrate is enveloped by a close enclosure or series of close enclosures through at least a last dry converting station in the apparatus.

30. (original): An apparatus according to claim 26 wherein the substrate is enveloped by a close enclosure or series of close enclosures from at least a first dry converting station in the apparatus through at least a last dry converting station in the apparatus.

31. (original): An apparatus according to claim 26 wherein the substrate is enveloped in a close enclosure or series of close enclosures from at least a first dry converting station in the apparatus up to a takeup reel or up to or through a packaging station.

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32. (previously presented): An apparatus for converting a moving substrate of indefinite length comprising a dry converting station and substrate-handling equipment for conveying the substrate through the dry converting station, the substrate being enveloped in the dry converting station by a close enclosure supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure, wherein the substrate is enveloped in a close enclosure or series of close enclosures from a cabinet containing an unwind reel to a cabinet containing a takeup reel.

33. (original): An apparatus according to claim 26 wherein at least two close enclosures have different average headspaces or average footspaces.

34. (previously presented): An apparatus for converting a moving substrate of indefinite length comprising a dry converting station and substrate-handling equipment for conveying the substrate through the dry converting station, the substrate being enveloped in the dry converting station by a close enclosure supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure, wherein a conditioned gas stream is supplied to at least the first in a series of interconnected close enclosures and the conditioned gas is carried along with the moving substrate to a downstream close enclosure or pushed to an upstream enclosure or process.

35. (previously presented): An apparatus for converting a moving substrate of indefinite length comprising a dry converting station and substrate-handling equipment for conveying the substrate through the dry converting station, the substrate being enveloped in the dry converting station by a close enclosure supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure, wherein conditioned gas streams are supplied to a plurality of close enclosures and gas streams are withdrawn from a plurality of close enclosures.

36. (original): An apparatus according to claim 26 wherein conditioned gas streams are supplied to each in a series of interconnected close enclosures.

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37. (original): An apparatus according to claim 26 having seals with respect to the moving substrate at the upstream and downstream ends of a series of interconnected close enclosures.

38. (original): An apparatus according to claim 26 wherein a close enclosure has a pressure gradient of at least about -0.5 Pa or higher.

39. (original): An apparatus according to claim 26 wherein a close enclosure has a positive pressure gradient.

40. (previously presented): An apparatus for converting a moving substrate of indefinite length comprising a dry converting station and substrate-handling equipment for conveying the substrate through the dry converting station, the substrate being enveloped in the dry converting station by a close enclosure supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure, the apparatus further comprising first and second enclosures having a material difference in their respective operating pressures connected by a close enclosure comprising a transition zone between the first and second enclosures.

41. (previously presented): An apparatus according to claim 40 wherein there is a ten-fold or greater pressure difference between atmospheres in the first and second enclosures.

42. (original): An apparatus according to claim 26 wherein the total of the average headspace and average footspace in a close enclosure is 10 cm or less.

43. (previously presented): An apparatus for converting a moving substrate of indefinite length comprising a dry converting station and substrate-handling equipment for conveying the substrate through the dry converting station, the substrate being enveloped in the dry converting station by a close enclosure supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure, wherein the total of the average headspace and average footspace in a close enclosure is 5 cm or less.

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44. (previously presented): An apparatus according to claim 43 wherein the total of the average headspace and average footspace in any close enclosure is 3 cm or less.

45. (previously presented): An apparatus for converting a moving substrate of indefinite length comprising a dry converting station and substrate-handling equipment for conveying the substrate through the dry converting station, the substrate being enveloped in the dry converting station by a close enclosure supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure, wherein a first chamber having a gas introduction device is positioned near a control surface, a second chamber having a gas withdrawal device is positioned near the control surface, the control surface and first and second chambers together define a region wherein adjacent gas phases possess an amount of mass, at least a portion of the mass from the adjacent gas phases can be transported through the gas withdrawal device by inducing a flow through the region, and the mass flow can be segmented into the following components:

**M1** means total net time-average mass flow per unit of substrate width into or out of the region resulting from pressure gradients,

**M1'** means the total net time-average mass flow of a gas per unit width into the region through the first chamber from the gas introduction device,

**M2** means the time-average mass flow of conditioned gas per unit width from or into the at least one major surface of the substrate into or from the region,

**M3** means total net time-average mass flow per unit width into the region resulting from motion of the material, and

**M4** means time-average rate of mass transport through the gas withdrawal device per unit width.

46. (original): An apparatus according to claim 45 wherein M1 has a value less than zero and greater than -0.25 kg/second/meter.

47. (original): An apparatus according to claim 45 wherein M1 has a value less than zero and greater than -0.10 kg/second/meter.



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48. (original): An apparatus according to claim 26 wherein a stream of conditioned gas flows at a rate sufficient to reduce a close enclosure particle count by 75% or more.

49. (original): An apparatus according to claim 26 wherein the streams of conditioned gas flow at a rate sufficient to reduce the close enclosure particle counts by 90% or more.

50. (currently amended): A process for dry converting a moving web substrate passing from an unwind reel to a takeup reel comprising substrate comprising:

unwinding a web substrate; and

conveying the substrate through a dry converting station in a close enclosure while supplying the enclosure with one or more streams of conditioned gas flowing at a rate sufficient to cause a material change in a physical property of interest for the atmosphere in the close enclosure.

51. (currently amended): An apparatus for converting a moving web substrate passing from an unwind reel to a takeup reel, the apparatus comprising a dry an unwind reel, dry converting station and substrate handling web-handling equipment for conveying the substrate from the unwind reel through the dry converting station, the substrate being enveloped in the dry converting station by a close enclosure supplied with one or more streams of conditioned gas flowing at a rate sufficient to cause a material change in a physical property of interest for the atmosphere in the close enclosure.

52. (previously presented): An apparatus according to claim 51 wherein the total of the average headspace and average footspace in a close-coupled enclosure is 10 cm or less.

53. (previously presented): A process according to claim 50 wherein the total of the average headspace and average footspace in a close-coupled enclosure is 10 cm or less.

54. (previously presented): An apparatus according to claim 49 wherein the total of the average headspace and average footspace in a close-coupled enclosure is 10 cm or less.

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55. (previously presented): An apparatus for converting a moving substrate of indefinite length comprising a dry converting station and substrate-handling equipment for conveying the substrate through the dry converting station, the substrate being enveloped in the dry converting station by a close enclosure supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure, wherein the streams of conditioned gas flow at a rate sufficient to reduce the close enclosure particle counts by 90% or more and the total of the average headspace and average footspace in a close-coupled enclosure is 3 cm or less.

56. (previously presented): An apparatus according to claim 55 wherein the total of the average headspace and average footspace in a close-coupled enclosure is 2 cm or less.

57. (previously presented): An apparatus according to claim 55 wherein the total of the average headspace and average footspace in a close-coupled enclosure is 1.5 cm or less.

58. (previously presented): A process according to claim 25 wherein the total of the average headspace and average footspace in a close-coupled enclosure is 10 cm or less.

59. (previously presented): A process for dry converting a moving substrate of indefinite length comprising conveying the substrate through a dry converting station in a close enclosure while supplying the enclosure with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure, the process comprising flowing streams of conditioned gas at a rate sufficient to reduce the close enclosure particle counts by 90% or more, wherein the total of the average headspace and average footspace in a close-coupled enclosure is 3 cm or less.

60. (previously presented): A process according to claim 59 wherein the total of the average headspace and average footspace in a close-coupled enclosure is 2 cm or less.

61. (previously presented): A process according to claim 59 wherein the total of the average headspace and average footspace in a close-coupled enclosure is 1.5 cm or less.

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62. (new): A process according to claim 1 further comprising coating the substrate and forming the coated substrate into a roll.

63. (new): An apparatus according to claim 26 further comprising a takeup reel or packaging station.

64. (new): A process according to claim 50 further comprising coating the substrate and forming the coated substrate into a roll.

65. (new): An apparatus according to claim 51 further comprising a takeup reel or packaging station.